

REMARKS

Claims 1 and 9-23 are pending. Independent claim 1 has been amended. No new matter was added. In addition, Applicant submits arguments for overcoming the anticipation rejection of the claims based on the prior art of record. Accordingly, Applicant respectfully submits that the present application is in condition for allowance.

Claim Rejection - 35 USC 102(b)

In the Office Action, claims 1 and 9-23 are rejected under 35 USC 102(b) as being anticipated by U.S. Patent No. 1,236,353 issued to Purcell.

A claim of a patent application is anticipated under 35 USC 102 only if each and every element is found described in a single prior art reference. **The identical invention must be shown in as complete detail as contained in the claim.** The elements identified by the reference must be arranged as required by the claim. If a prior art reference relied on in a rejection made under 35 USC 102 does not contain every element recited in the claim in as complete detail as is contained in the claim and arranged as recited in the claim, the rejection is improper.

Applicant respectfully submits that Purcell fails to anticipate independent claim 1 of the present application. The “identical invention” of independent claim 1 of the present application is not disclosed by Purcell. More specifically, Purcell fails to disclose: (i) a closed system that enables “a heat pipe” to be “constituted by the steam generation unit and panel body upon depressurization” (see claim 1); and (ii) a “liquid working fluid” providing the same function of that of the present invention.

The Present Invention

The present invention relates to a panel radiator integrated with a heat source capable of transporting heat efficiently from a heating source to a heat radiating unit based on a closed system heat pipe principle.

In the present invention, high temperature combustion gas in the combustion unit (2) is subject to heat exchange with the liquid working fluid in the heat exchange unit (3) to generate steam in the steam generation unit (4). The term liquid (or water) is used on page 5, line 6; page 6, lines 15 and 23; page 7, lines 3, 14 and 24; and page 8, line 29 of the present application, as filed. Thus, no new matter was added.

The steam generated from the liquid working fluid is introduced to the steam introduction heater (7) via the introduction pipes (5, 6) and radiates heat from the panel body (1). Subsequently, the steam will become condensed and return to a liquid form while releasing the latent heat of vaporization. This condensed liquid will return to the steam generation unit (4) through the introduction pipes (5, 6). The working fluid that returns to liquid form is subject to heat exchange once again in the heat exchange unit (3) so as to generate steam in the steam generation unit (4). Thus, a closed system heat pipe is provided.

Moreover, when a pressure difference is formed based on the thermal gradient in the steam generation unit (4) due to the location where the combustion unit (2) is installed, one of the introduction pipes will become the main introduction unit of the steam and the other introduction pipe will become the main side for liquid return. As a result, the present invention yields a significant effect in that the introduction of steam and efficiency of liquid return will increase, and the introduction of steam to the panel body (1) will be accelerated and uniform.

As described above and in the present application, as filed, the basic structure of the steam radiator according to the present invention has a technical feature where the liquid

working fluid is the heat radiation medium and reciprocates between the steam generation unit (4) and the panel body (1) in a closed system (ie., neither the steam nor the liquid is exhausted from the system).

The Purcell Patent

Purcell discloses technology concerning a gas radiator through which products of combustion freely and easily escape to ambient atmosphere via an exhaust stack. See page 1, lines 54-59, of Purcell. This is true even when the radiator is filled with cold air and the gas burner is initially ignited.

Purcell discloses a conventional gas radiator wherein the products of combustion generated within a burning chamber (9) in the central radiating member (2) flows from the upper opening (6) of the central radiating member (2) to the side radiating members (3), reaches the rear back draft chamber (11) from the lower opening (7) of the central radiating member (2) through the foregoing members, and discharges from the opening (18) to an exhaust stack.

As discussed in Purcell, since cold, heavy air is filled in the side radiating members (3) upon ignition, there is a problem in that the products of combustion cannot readily pass inside the side radiating members (3) and will fill the burning chamber (9) and flow out into the room or will stop combustion. Thus, Purcell discloses the use of converging side guides (21), or deflectors, and a triangular escape opening (22) provided to a partition (8) in the central radiating chamber (2) so as to directly flow the products of combustion from this opening to the draft chamber and allow it to escape the exhaust stack. Accordingly, the products of combustion can flow gradually to the side radiating members (3), and the products of combustion can escape to

the exhaust stack through a proper path. Such a teaching is simply irrelevant to the present invention.

Purcell Fails to Provide the “identical invention” of Claim 1 of the present application

Claim 1 of the present application requires a closed system in which the working fluid changes between steam and liquid and is not exhausted from the system. For instance, see the limitation in claim 1 requiring a “heat pipe constituted by the steam generation unit and panel body upon depressurization”.

Purcell fails to disclose a closed system. In Purcell, products of combustion flow through the gas radiator to radiate heat from the radiator, and thereafter, the products of combustion freely flow out of the gas radiator to an exhaust stack where they are exhausted to ambient atmosphere.

Further, claim 1 of the present invention requires a liquid working fluid as well as a steam generation unit (which generates steam from the liquid working fluid) and steam introduction pipes which provide paths for the steam to flow into the panel radiating body and paths for liquid condensing from the steam to return to the steam generation unit.

Purcell fails to disclose a liquid working fluid or the generation of steam. Of course, Purcell also fails to disclose a structure enabling steam to enter a panel radiating body and liquid condensing from the steam to return to a steam generating unit. Rather, it simply provides a path for combustion gases to exit into an exhaust stack.

From the above, it is clear that Purcell is related to a technology clearly different from the present invention in terms of structure, configuration, function, effect, and objective. Purcell

clearly fails to disclose an “identical invention” required for a proper anticipation rejection under 35 USC 102(b).

For the above reasons, Applicant respectfully requests reconsideration and removal of the rejection of claim 1 as being anticipated over Purcell.

Further, a person of ordinary skill in the art would not have been able to arrive at the present invention based simply on the disclosure provided by Purcell. In the Office Action, the Examiner notes U.S. Patent No. 4,014,316 issued to Jones et al. and states that “at this time there is no need to apply this reference.” Jones relates to a system for directly heating a submerged tube to heat a fluid in a tank. Jones is directed primarily to the structure of the burner. In contrast, the present invention is directed to a panel type steam radiator and includes limitations with respect to the panel radiation body, steam generation unit, and steam introduction pipes and the paths through which steam is transferred to the panel radiation body and returns as condensed liquid. Purcell and Jones clearly fail to make obvious any of the structural features stated in claims 1 and 9-23 of the present application.

Conclusion

In view of the above amendment and remarks, Applicant respectfully submits that the rejection stated in the Office Action has been overcome. A favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Response to our deposit account no. 08-3040.

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